This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Minor, Municipal permit. The discharge results from the operation of a 0.014 MGD wastewater treatment plant. This permit action consists of updating the proposed effluent limits to reflect the current Virginia WQS (effective January 6, 2011) and updating permit language as appropriate. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9VAC25-260 *et seq.*

1.	Facility Name and Mailing Address:	Locust Grove Elementary School WWTP 200 Dailey Drive Orange, VA 22960	SIC Code :	4952 WWTP
	Facility Location:	31230 Constitution Highway, Orange, VA 22960	County:	Orange
	Facility Contact Name:	Doug Arnold	Telephone Number:	540-661-4550 Ext.1526
	Facility E-mail Address:	darnold@ocss-va.org		
2.	Permit No.:	VA0078131	Expiration Date of previous permit:	March 3, 2014
	Other VPDES Permits associated with this facility:		None	
	Other Permits associated with this facility:		None	
	E2/E3/E4 Status:	NA		
3.	Owner Name:	Orange County School Board		
	Owner Contact/Title:	Dr. Brenda Tanner/ Interim Superintendent of Public Schools	Telephone Number:	540-661-4550
	Owner E-mail Address:	btanner@ocss-va.org		
4.	Application Complete Date:	August 5, 2013		
	Permit Drafted By:	Joan C. Crowther	Date Drafted:	9/10/14
	Draft Permit Reviewed By:	Anna Westernik	Date Reviewed:	9/11/14
	Draft Permit Reviewed By:	Alison Thompson	Date Reviewed:	9/16/14
	Public Comment Period :	Start Date: 10/2/14	End Date:	11/3/14

5. Receiving Waters Information: See Attachment 1 for the Flow Frequency Determination

Receiving Stream Name :	Cormack Run, UT	Stream Code:	3-XDD
Drainage Area at Outfall:	0.04 sq.mi.	River Mile:	0.9
Stream Basin:	Rappahannock River	Subbasin:	None
Section:	4	Stream Class:	III
Special Standards:	None	Waterbody ID:	VAN-E17R
7Q10 Low Flow:	0.0MGD	7Q10 High Flow:	0.0 MGD
1Q10 Low Flow:	0.0 MGD	1Q10 High Flow:	0.0 MGD
30Q10 Low Flow:	0.0 MGD	30Q10 High Flow:	0.0 MGD
Harmonic Mean Flow:	0.0 MGD	30Q5 Flow:	0.0 MGD

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

X	State Water Control Law	___	EPA Guidelines
X	Clean Water Act	X	Water Quality Standards
X	VPDES Permit Regulation	___	Other
X	EPA NPDES Regulation		

7. Licensed Operator Requirements: Class IV

8. Reliability Class: Class II

9. Permit Characterization:

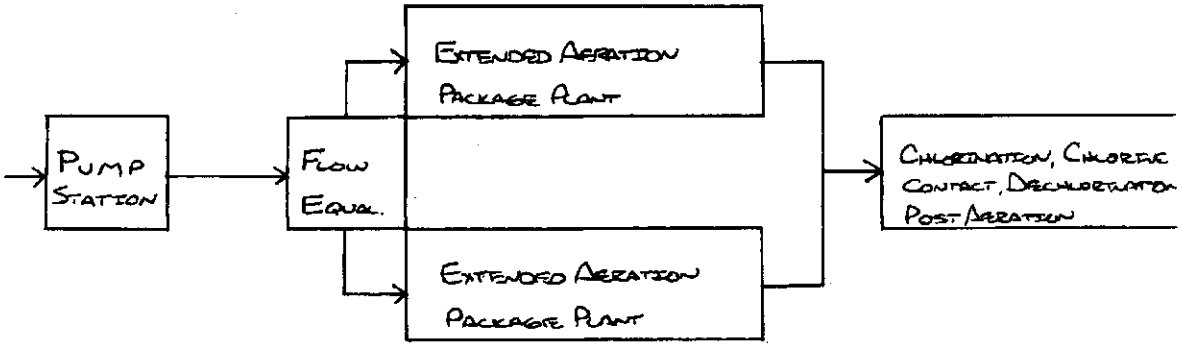
___	Private	___	Effluent Limited	___	Possible Interstate Effect
___	Federal	X	Water Quality Limited	___	Compliance Schedule Required
___	State	___	Whole Effluent Toxicity Program Required	___	Interim Limits in Permit
X	POTW	___	Pretreatment Program Required	___	Interim Limits in Other Document
X	TMDL	X	e-DMR Participant		

10. Wastewater Sources and Treatment Description:

The wastewater flow from the middle school discharges into two septic tanks operated in series prior to facility's pump station where it joins the wastewater from the elementary school. The wastewater flows through a bar screen and then into an equalization basin. The wastewater then enters a splitter box dividing the flow between two extended aeration basin plants, including screening, aeration basins, clarification, and aerobic digestion. Wastewater from both extended aeration facilities is joined to be treated by chlorination, dechlorination and post aeration prior to its discharge into the unnamed tributary to Cormack Run.

On November 9, 2003, a Certificate to Operate (CTO) was issued for the addition of a duplex pump station and an additional 7,500 gallon per day extended aeration basin, with flow equalization and sludge holding tank. New chlorine disinfection and dechlorination units to serve both treatment trains were also installed. The complete sewage treatment works was rated at a flow capacity of 0.014 MGD with the issuance of this CTO.

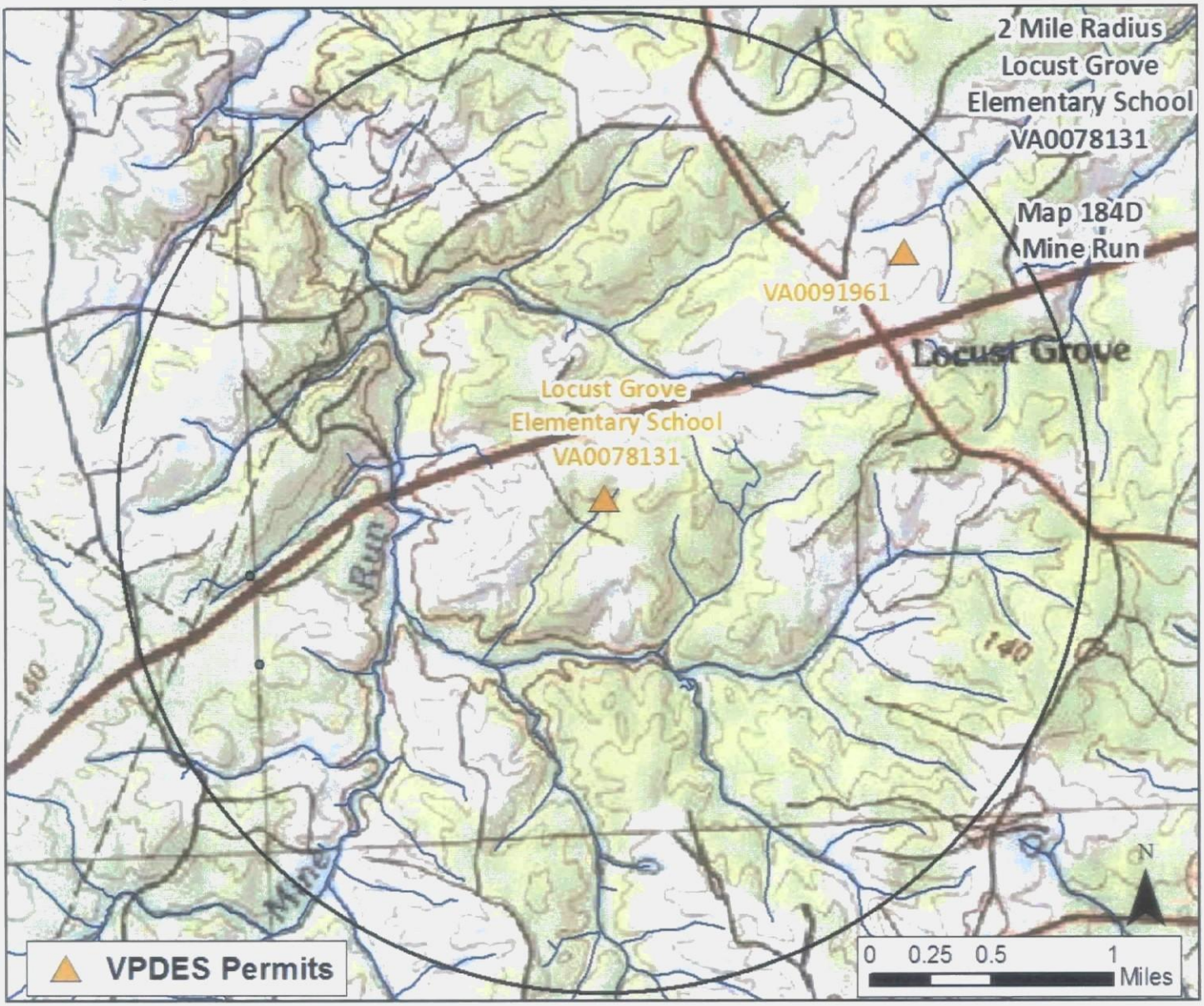
Below is a facility schematic/diagram.



Locust Grove Elementary School
Wastewater Treatment Plant Schematic
from VPDES Permit Application received May 2008

TABLE 1 – Outfall Description				
Outfall Number	**Discharge Sources**	**Treatment**	**Design Flow**	**Outfall Latitude and Longitude**
001	Domestic Wastewater	See Item 10 above.	0.014 MGD	38° 17' 45" N 77° 49' 53" W

Mine Run Topographic Map, DEQ Map Number 184D.



11. Sludge Treatment and Disposal Methods:

The sludge from the wastewater treatment plant is transported to the Spotsylvania County's Massaponax Wastewater Treatment Plant (VA0068110) is located at 10900 HCC Drive, Fredericksburg, Virginia, 22408. Approximately <0.1 dry metric tons per a 365-day period is transported from this wastewater treatment plant to be treated.

12. Discharges in Vicinity of Discharge

TABLE 2 – Other Items	
VA0091961	Locust Grove Town Center, discharges into Flat Run, UT

13. Material Storage:

TABLE 3 - Material Storage		
Materials Description	**Volume Stored**	**Spill/Stormwater Prevention Measures**
Chlorination tablets	100 lbs.	Stored in building on-site
Dechlorination tablets	100 lbs.	Stored in building on-site
Soda Ash	200 lbs. (max)	Stored in building on-site

14. Site Inspection:

Performed by Terry Nelson on April 14, 2009 (see Attachment 2).

15. Receiving Stream Water Quality and Water Quality Standards:

a. Ambient Water Quality Data

This facility discharges into an unnamed tributary to Cormack Run. This unnamed tributary has not been monitored or assessed by DEQ. The nearest downstream DEQ monitoring station is on Mine Run, 3-MIR004.05, located at the Route 611 bridge crossing. This station on Mine Run is located approximately 7.4 miles downstream of Outfall 001. The following is the water quality summary for Mine Run, as taken from the 2012 Integrated Report:

DEQ Ambient water quality monitoring station located in this segment of Mine Run (Class III, Section 4):

> *E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. A bacteria TMDL for the Mine Run watershed was completed and approved. The aquatic life, fish consumption and wildlife uses are considered fully supporting.*

b. 303(d) Listed Stream Segments and Total Maximum Daily Loads (TMDLs)

TABLE 4 - 303(d) Listed Stream Segments and Total Maximum Daily Loads (TMDLs)							
Waterbody Name	**Impaired Use**	**Cause**	**Distance From Outfall**	**TMDL completed**	**WLA**	**Basis for WLA**	**TMDL Schedule**
Impairment Information in the 2012 Integrated Report							
Mine Run	Recreation	*E. coli*	1.3 miles	Mountain Run and Mine Run Bacteria 11/15/2005	2.44E+10 cfu/year *E. coli*	126 cfu/100ml *E. coli* --- 0.014 MGD	WLA was assigned to facility in a modification to the TMDL. EPA approval date: 5/5/08
Rapidan River	Fish Consumption	Mercury	14.6 miles	No	---	---	2022

The tidal Rappahannock River, which is located approximately 40 miles downstream of this facility, is listed with a PCB impairment. In support for the PCB TMDL that is scheduled for development by 2016 for the tidal Rappahannock River, this facility is a candidate for low-level PCB monitoring, based upon its designation as a minor municipal facility. Low-level PCB analysis uses EPA Method 1668, which is capable of detecting low-level concentrations for all 209 PCB congeners. DEQ staff has concluded that low-level PCB monitoring is not warranted for this facility, as it is a small wastewater treatment facility (<0.1 MGD). Based upon this information, this facility will not be requested to monitor for low-level PCBs.

There is a completed downstream TMDL for the aquatic life use impairment for the Chesapeake Bay. However, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

Significant portions of the Chesapeake Bay and its tributaries are listed as impaired on Virginia's 303(d) list of impaired waters for not meeting the aquatic life use support goal, and the 2012 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report indicates that much of the mainstem Bay does not fully support this use support goal under Virginia's Water Quality Assessment guidelines. Nutrient enrichment is cited as one of the primary causes of impairment. EPA issued the Bay TMDL on December 29, 2010. It was based, in part, on the Watershed Implementation Plans developed by the Bay watershed states and the District of Columbia.

The Chesapeake Bay TMDL addresses all segments of the Bay and its tidal tributaries that are on the impaired waters list. As with all TMDLs, a maximum aggregate watershed pollutant loading necessary to achieve the Chesapeake Bay's water quality standards has been identified. This aggregate watershed loading is divided among the Bay states and their major tributary basins, as well as by major source categories [wastewater, urban storm water, onsite/septic agriculture, air deposition]. Fact Sheet Section 17.e provides additional information on specific nutrient limitations for this facility to implement the provisions of the Chesapeake Bay TMDL.

The planning statement is found in Attachment 3.

c. Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream Cormack Run, UT is located within Section 4 of the Rappahannock River Basin, and classified as a Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

The Freshwater Water Quality/Wasteload Allocation Analysis (Attachment 4) details other water quality criteria applicable to the receiving stream.

Some Water Quality Criteria are dependent on the temperature and pH and Total Hardness of the stream and final effluent. The stream and final effluent values used as part of Attachment 4 are as follows:

pH and Temperature for Ammonia Criteria:
The fresh water, aquatic life Water Quality Criteria for Ammonia are dependent on the instream temperature and pH. Since the effluent may have an impact on the instream values, the temperature and pH values of the effluent must also be considered when determining the ammonia criteria for the receiving stream. The 90th percentile temperature and pH values are used because they best represent the critical design conditions of the receiving stream.

The 7Q10 and 1Q10 of the receiving stream are 0.0 MGD. In cases such as this, effluent pH and temperature data may be used to establish the ammonia water quality criteria.

In the 2009 permit reissuance process, the monthly maximum pH values for the period of January 2000 through November 2009 were used to determine the 90th percentile for the effluent pH. A review of the monthly maximum pH data for January 2000 through July 2014 found no significant differences. Therefore, the previously established pH 90th percentile of final effluent of 7.7 S.U. shall be carried forward as part of this reissuance process. See Attachment 5 for the derivation of the 90th percentile values of the effluent pH data from January 2000 through November 2008.

Since there were no effluent temperature values available, the default value of 25°C was used.

The ammonia water quality standards calculations are shown in Attachment 6.

Total Hardness for Hardness-Dependent Metals Criteria:
The Water Quality Criteria for some metals are dependent on the receiving stream's hardness (expressed as mg/L calcium carbonate). The 7Q10 of the receiving stream is zero and no ambient data is available, the effluent data for hardness can be used to determine the metals criteria. The hardness-dependent metals criteria in Attachment 4 are based on an effluent value of 88.6 mg/L. This hardness value was determined by averaging the effluent hardness data collected from February 1994 to April 1998. The Total Hardness data is found in Attachment 7.

Bacteria Criteria:
The Virginia Water Quality Standards at 9VAC25-260-170A state that the following criteria shall apply to protect primary recreational uses in surface waters:

> *E. coli* bacteria per 100 ml of water shall not exceed a monthly geometric mean of 126 n/100 ml for a minimum of four weekly samples taken during any calendar month.

d. Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Cormack Run, UT, is located within Section 4 of the Rappahannock River Basin. There are no special standards designed for this section.

16. Antidegradation (9VAC25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1 because the critical flows for the stream are zero and at times the stream flow is comprised of only effluent. It is staff's best professional judgment that such streams are Tier 1. Permit limits proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLAs) are calculated. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLA's are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a. Effluent Screening:
Effluent data (July 2010 through July 2014) obtained from DMRs have been reviewed and determined to be suitable for evaluation. Effluent data were reviewed and the following exceedances of the established limitations have occurred:

Total Suspended Solids: September 2010, September 2012, and August 2013
TKN: December 2010 and February 2011

The following pollutants require a wasteload allocation analysis: Ammonia as N and Total Residual Chlorine.

b. Mixing Zones and Wasteload Allocations (WLAs):
Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{Co\,[\,Qe + (f)(Qs)\,] - [\,(Cs)(f)(Qs)\,]}{Qe}$$

Where:
- WLA = Wasteload allocation
- Co = In-stream water quality criteria
- Qe = Design flow
- Qs = Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; 30Q10 for ammonia criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
- f = Decimal fraction of critical flow
- Cs = Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10 and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the Co.

Staff derived wasteload allocations where parameters are reasonably expected to be present in an effluent (e.g., total residual chlorine where chlorine is used as a means of disinfection) and where effluent data indicate the pollutant is present in the discharge above quantifiable levels. With regard to the Outfall 001 discharge, ammonia as N is likely present since this is a WWTP treating sewage and total residual chlorine may be present since chlorine is used for disinfection.

c. Effluent Limitations Toxic Pollutants, Outfall 001 –

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N:

Staff used pH data (monthly maximum pH values from January 2000 through October 2008) and temperature default value of 25 °C to derive the ammonia criteria.

Because the effluent flow frequency is intermittent in nature, only the acute ammonia criterion is used to determine the ammonia effluent limitation. Based on this, the ammonia monthly average and weekly maximum effluent limitations required to maintain water quality standards in the receiving stream would be 14.4 mg/L. Since the stream model conducted on August 17, 1998 required a TKN monthly average limitation of 8.0 mg/L and a weekly maximum limitation of 12 mg/L to maintain the dissolved oxygen in the receiving stream and TKN is the sum of organic nitrogen, ammonia (NH_3) and ammonium (NH_4^+), the TKN effluent limitation of 8.0 mg/L will ensure that the ammonia effluent limitation of 14.4 mg/L is being complied with. There is no need to include the ammonia monthly or weekly effluent limitation in the permit. See Attachment 6 for the Ammonia effluent limitations calculations.

NOTE: The Environmental Protection Agency (EPA) finalized new, more stringent ammonia criteria in August 2013; possibly resulting in significant reductions in ammonia effluent limitations. It is staff's best professional judgment that incorporation of these criteria into the Virginia Water Quality Standards are forthcoming. This and many other facilities may be required to comply with new criteria during their next permit term.

2) Total Residual Chlorine:

Chlorine is used for disinfection and is potentially in the discharge. Staff calculated WLAs for TRC using current critical flows and the mixing allowance. In accordance with current DEQ guidance, staff used a default data point of 0.2 mg/L and the calculated WLAs to derive limits. A monthly average of 0.008 mg/L and a weekly average limit of 0.010 mg/L are proposed for this discharge (see Attachment 8).

3) Metals/Organics:

No metals or organics data were available for review; therefore, no effluent limits are proposed.

d. Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes to dissolved oxygen (D.O.), carbonaceous biochemical oxygen demand-5 day ($cBOD_5$), total suspended solids (TSS), Total Kjeldahl Nitrogen (TKN), and pH limitations are proposed.

Dissolved Oxygen, $cBOD_5$, and TKN limitations are based on the stream modeling conducted in August 17, 1998 (Attachment 9) and are set to meet the water quality criteria for D.O. in the receiving stream. Since the receiving stream is intermittent and the 7Q10 flow is zero, the stream model was run to maintain a D.O. of 5 mg/L. The stream model used a stream length of 1.7 miles determined that the D.O. was maintained. At 0.6 rivermile downstream from the discharge, the D. O. in the stream started to recover with a design flow of 0.014 MGD and these effluent limitations: $CBOD_5$ of 17 mg/L; TKN of 8 mg/L and D.O. of 6 mg/L.

It is staff's practice to equate the Total Suspended Solids limits with the $cBOD_5$ limits. TSS limits are established to equal $cBOD_5$ limits since the two pollutants are closely related in terms of treatment of domestic sewage.

pH limitations are set at the water quality criteria.

E. coli limitation is in accordance with the Water Quality Standards 9VAC25-260-170.

e. Effluent Annual Average Limitations and Monitoring, Outfall 001 – Nutrients

Nonsignificant dischargers are subject to aggregate wasteload allocations for Total Nitrogen (TN), Total Phosphorus (TP), and Sediments under the Total Maximum Daily Load (TMDL) for the Chesapeake Bay. Monitoring for TN, TP, and Nitrate+Nitrite, is required in order to verify the aggregate wasteload allocations. The facility already has TSS and TKN monitoring so this permit reissuance is only adding Nitrate+Nitrite, Total Phosphorus, and Total Nitrogen monitoring.

f. Effluent Limitations and Monitoring Summary:

The effluent limitations are presented in the following table. Limits were established for Flow, $cBOD_5$, Total Suspended Solids, pH, Dissolved Oxygen, Total Residual Chlorine, and TKN.

The limit for Total Suspended Solids is based on Best Professional Judgment.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and a conversion factor of 3.785.

Sample Type and Frequency are in accordance with the recommendations in the 2014 VPDES Permit Manual.

The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for $cBOD_5$ and TSS (or 65% for equivalent to secondary). The limits in this permit are water-quality-based effluent limits and result in greater than 85% removal.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

19. Effluent Limitations/Monitoring Requirements:

Design flow is 0.014 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/D	Estimate
pH	3	NA	NA	6.0 S.U.	9.0 S.U.	1/D	Grab
$cBOD_5$	3,5	17 mg/L 0.9 kg/day	26 mg/L 1.4 kg/day	NA	NA	1/M	Grab
Total Suspended Solids (TSS)	2	17 mg/L 0.9 kg/day	26 mg/L 1.4 kg/day	NA	NA	1/M	Grab
Dissolved Oxygen (DO)	3	NA	NA	6.0 mg/L	NA	1/D	Grab
Total Kjeldahl Nitrogen (TKN)	3,5, 6	8.0 mg/L 0.4 kg/day	12mg/L 0.6 kg/day	NA	NA	1/M	Grab
E. coli (Geometric Mean)	3	126 n/100ml	NA	NA	NA	1/W	Grab
Total Residual Chlorine (after contact tank)	2, 3, 4	NA	NA	1.0 mg/L	NA	1/D	Grab
Total Residual Chlorine (after dechlorination)	3	0.008 mg/L	0.10 mg/L	NA	NA	1/D	Grab
Nitrate+Nitrite, as N	2, 3, 6	NA	NA	NA	NL mg/L	1/YR	Grab
Total Nitrogen [a]	2, 3, 6	NA	NA	NA	NL mg/L	1/YR	Calculated
Total Phosphorus	2, 3, 6	NA	NA	NA	NL mg/L	1/YR	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards
4. DEQ Disinfection Guidance
5. Stream Model- Attachment 9
6. Guidance Memo No. 14-2011 –Nutrient Monitoring for "Nonsignificant" Discharges to the Chesapeake Bay Watershed

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard Units.

1/D = Once every day.
1/W = Once every week.
1/M = Once every month.
1/YR = Once every calendar year.

Grab = An individual sample collected over a period of time not to exceed 15 minutes.
a. Total Nitrogen = Sum of TKN plus Nitrate+Nitrite

20. Other Permit Requirements:

a. Part I.B. of the permit contains additional chlorine monitoring requirements, quantification levels and compliance reporting instructions.

These additional chlorine requirements are necessary per the Sewage Collection and Treatment Regulations at 9VAC25-790 and by the Water Quality Standards at 9VAC25-260-170. A minimum chlorine residual must be maintained at the exit of the chlorine contact tank to assure adequate disinfection. No more that 10% of the monthly test results for TRC at the exit of the chlorine contact tank shall be <1.0 mg/L with any TRC <0.6 mg/L considered a system failure. Monitoring at numerous STPs has concluded that a TRC residual of 1.0 mg/L is an adequate indicator of compliance with the *E. coli* criteria. *E. coli* limits are defined in this section as well as monitoring requirements to take effect should an alternate means of disinfection be used.

9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

21. Other Special Conditions:

a. **95% Capacity Reopener.** The VPDES Permit Regulation at 9VAC25-31-200.B.4 requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. This

facility is a POTW.

b. **O&M Manual Requirement.** Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. The permittee shall maintain a current Operations and Maintenance (O&M) Manual. The permittee shall operate the treatment works in accordance with the O&M Manual and shall make the O&M Manual available to Department personnel for review upon request. Any changes in the practices and procedures followed by the permittee shall be documented in the O&M Manual within 90 days of the effective date of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

c. **CTC, CTO Requirement.** The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.

d. **Licensed Operator Requirement.** The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9VAC25-31-200 C, and by the Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals Regulations (18VAC160-20-10 et seq.) requires licensure of operators. This facility requires a Class IV operator.

e. **Reliability Class.** The Sewage Collection and Treatment Regulations at 9VAC25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. The facility is required to meet a reliability Class of II.

f. **Water Quality Criteria Reopener.** The VPDES Permit Regulation at 9VAC25-31-220 D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should effluent monitoring indicate the need for any water quality-based limitations, this permit may be modified or alternatively revoked and reissued to incorporate appropriate limitations.

g. **Sludge Reopener.** The VPDES Permit Regulation at 9VAC25-31-220.C requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.

h. **Sludge Use and Disposal.** The VPDES Permit Regulation at 9VAC25-31-100.P; 220.B.2, and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage.

i. **TMDL Reopener.** This special condition is to allow the permit to be reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

22. Permit Section Part II.

Required by VPDES Regulation 9VAC25-31-190, Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

a. Special Conditions:
There are no changes from the 2009 VPDES Permit.

b. Monitoring and Effluent Limitations:
Monitoring for TN, TP, and Nitrate+Nitrite has been added to the permit in accordance with Guidance Memo No. 14-2011 – Nutrient Monitoring for "Nonsignificant" Discharges to the Chesapeake Bay Watershed.

24. Variances/Alternate Limits or Conditions:

This permit contains no variances/alternate limits or conditions.

25. Public Notice Information:

First Public Notice Date: 10/2/14 Second Public Notice Date: 10/9/14

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3925, joan.crowther@deq.virginia.gov. See Attachment 10 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

26. Additional Comments:

Previous Board Action: None.

Staff Comments: None.

Public Comment: No comments were received during the public notice.

Locust Grove Elementary School Wastewater Treatment Plant
Fact Sheet Attachments

Attachment	Description
1	Flow Frequency Memo dated March 9, 1998
2	Site Inspection Report dated April 14, 2009 by Terry Nelson, DEQ-NRO Water Inspector
3	Planning Statement for Locust Grove Elementary School, dated September 10, 2014
4	Freshwater Water Quality Criteria/ Wasteload Allocated Analysis
5	Monthly Maximum Effluent pH data January 2000 through November 2008
6	Ammonia Effluent Calculation
7	Effluent Hardness dated collected from February 1994 through April 1998
8	Total Chlorine Residual Calculation
9	Stream Model dated August 17, 1998
10	Public Notice

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
Water Quality Assessments and Planning
629 E. Main Street P.O. Box 10009 Richmond, Virginia 23240

SUBJECT: Flow Frequency Determination
Locust Grove Elementary School - #VA0078131

TO: James A. Olson, NRO

FROM: Paul E. Herman, P.E., WQAP

DATE: March 9, 1998

COPIES: Ron Gregory, Charles Martin, File

This memo supercedes Charles Martin's December 30, 1992 memo to Joan Crowther concerning the subject VPDES permit.

The Locust Grove Elementary School discharges to an unnamed tributary to the Cormack Run near Locust Grove, VA. Stream flow frequencies are required at this site by the permit writer for the purpose of calculating effluent limitations for the VPDES permit.

At the discharge point, the receiving stream is shown to be intermittent on the USGS Mine Run Quadrangle topographic map. The flow frequencies for intermittent streams are 0.0 cfs for the 1Q10, 7Q10, 30Q5, high flow 1Q10, high flow 7Q10, and harmonic mean. Flow frequencies have been determined for the first perennial reach downstream of the discharge point which occurs at the Cormack Run.

The USGS conducted several flow measurements on the Mine Run in 1951, 1953, 1981 to 1984, and 1989 to 1992. The measurements were made at the Route 611 bridge at Burr Hill, VA. The measurements made by the USGS were correlated with the same day daily mean values from two continuous record gages; one on the Hazel River at Rixeyville, VA #01663500 and the second on the Po River near Spotsylvania, VA #01673800. For each reference gage, the measurements and daily mean values were plotted by the USGS on a logarithmic graph and a best fit line was drawn through the data points. The required flow frequencies from each reference gage were plotted on the regression line and the associated flow frequencies at the measurement site were determined from the graph. The flow frequencies for the measurement site were determined by taking an average of the values determined from each of the plots.

The flow frequencies at the perennial point were determined by using the values at the measurement site and adjusting them by proportional drainage areas. The data for the reference gages, the measurement site and the perennial point are presented below:

Attachment 1

Po River near Spotsylvania, VA (#01673800):

Drainage Area = 77.4 mi^2

1Q10 = 0.12 cfs	High Flow 1Q10 = 5.8 cfs
7Q10 = 0.17 cfs	High Flow 7Q10 = 8.6 cfs
30Q5 = 0.74 cfs	HM = 4.2 cfs

Hazel River at Rixeyville, VA (#01663500):

Drainage Area = 287 mi^2

1Q10 = 3.8 cfs	High Flow 1Q10 = 64 cfs
7Q10 = 5.7 cfs	High Flow 7Q10 = 74 cfs
30Q5 = 19 cfs	HM = 86 cfs

Mine Run at Route 611 at Burr Hill, VA (#01667850):

Drainage Area = 31.8 mi^2

1Q10 = 0.05 cfs	High Flow 1Q10 = 2.9 cfs
7Q10 = 0.08 cfs	High Flow 7Q10 = 4.0 cfs
30Q5 = 0.42 cfs	HM = 3.1 cfs

Cormack Run above UT discharge receiving stream (perennial point):

Drainage Area = 5.18 mi^2

1Q10 = 0.008 cfs	High Flow 1Q10 = 0.47 cfs
7Q10 = 0.013 cfs	High Flow 7Q10 = 0.65 cfs
30Q5 = 0.068 cfs	HM = 0.50 cfs

The high flow months are January through May.

This analysis assumes there are no significant discharges, withdrawals or springs influencing the flow in the Cormack Run upstream of the perennial point.

If there are any questions concerning this analysis, please let me know.

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800 Fax (703) 583-3821
www.deq.virginia.gov

Preston Bryant
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

April 29, 2009

Mr. Larry Massie
Acting Superintendent
Orange County Public Schools
437 Waugh Boulevard
Orange, VA 22960

Re: Locust Grove Elementary School STP Inspection – VA0078131

Dear Mr. Massie:

Attached is a copy of the site inspection report generated while conducting a Facility Technical Inspection at the Locust Grove Elementary School - Sewage Treatment Plant (STP) on April 14, 2009. The compliance staff would like to thank Mr. Tim Jenkins for his time and assistance during the inspection.

If you have any questions or comments concerning this report, please feel free to contact me at the Northern Regional Office at (703) 583-3833 or by E-mail at twnelson@deq.virginia.gov.

Sincerely,

Terry Nelson

Terry Nelson
Environmental Specialist II

cc: Permit/DMR File
OWCP – SGStell
Electronic Copy: Compliance Manager; Compliance Auditor
Electronic Copy: Mr. Tim Jenkins – Dabney & Crooks

Attachment 2

DEQ
WASTEWATER FACILITY INSPECTION REPORT
PREFACE

VPDES/State Certification No.	(RE) Issuance Date	Amendment Date	Expiration Date
VA0078131	**03/04/2009**		**03/13/2014**

Facility Name	Address	Telephone Number
Locust Grove Elementary School	**31230 Constitution Highway Locust Grove, VA 22508**	**(540) 661-4420**
Owner Name	Address	Telephone Number
Orange County Public Schools	**437 Waugh Boulevard Orange, VA 22960**	**(540) 661-4550**
Responsible Official	Title	Telephone Number
Mr. Larry Massiek	**Acting Superintendent**	**(540) 661-4550**
Responsible Operator	Operator Cert. Class/number	Telephone Number
Douglas Crooks	**Class I / 1909000367**	**(540) 373-0380**

TYPE OF FACILITY:

DOMESTIC				**INDUSTRIAL**			
Federal		Major		Major		Primary	
Non-federal	X	Minor	X	Minor		Secondary	

INFLUENT CHARACTERISTICS:	DESIGN:
Flow	**14,000 gal/day**
Population Served	**Variable**
Connections Served	**One school**
BOD_5	**No data**
TSS	**No data**

EFFLUENT LIMITS: Units in mg/L unless otherwise specified.

Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**0.014**	**NL**	**$CBOD_5$**		**17**	**26**
pH (S.U.)	**6.0**		**9.0**	**Total Contact Cl**	**1.0**		
TSS		**17**	**26**	**Inst Tech Min Cl**	**0.6**		
DO	**6.0**			**Inst Res Max Cl**		**0.008**	**0.010**
TKN		**8**	**12**	**E. Coli (NCML)**		**126**	

Receiving Stream	**UT to Cormack Run**
Basin	**Rappahannock River**
Discharge Point (LAT)	**38° 17 79" N**
Discharge Point (LONG)	**77° 49' 75" W**

Virginia Department of Environmental Quality
Northern Regional Office

FOCUSED CEI TECH/LAB INSPECTION REPORT

FACILITY NAME: Locust Grove Elementary School		**INSPECTION DATE:**	April 14, 2009
		INSPECTOR	Terry Nelson
PERMIT No.: VA0078131		**REPORT DATE:**	April 23, 2009
TYPE OF FACILITY: ☑ Municipal ☐ Major ☐ Industrial ☑ Minor ☐ Federal ☐ Small Minor ☐ HP ☐ LP		**TIME OF INSPECTION:**	Arrival 1030 / Departure 1120
		TOTAL TIME SPENT (including prep & travel)	4 hours
PHOTOGRAPHS: ☑ Yes ☐ No		**UNANNOUNCED INSPECTION?**	☐ Yes ☑ No
REVIEWED BY / Date:			
PRESENT DURING INSPECTION: Tim Jenkins, Dabney & Crooks			

TECHNICAL INSPECTION

1. Has there been any new construction? • If so, were plans and specifications approved? Comments:	☐ Yes ☑ No
2. Is the Operations and Maintenance Manual approved and up-to-date? Comments: The O&M listed flow tiers from a previous permit that does not include the second treatment train. Outdated permit in Appendix, DEQ phone numbers are not consistent (703-583-3800 is recommended), outdated Chain of Custody for Patton, Harris, and Rust, some test methods listed are no longer approved	☐ Yes ☑ No
3. Are the Permit and/or Operation and Maintenance Manual specified licensed operator being met? Comments:	☑ Yes ☐ No
4. Are the Permit and/or Operation and Maintenance Manual specified operator staffing requirements being met? Comments:	☑ Yes ☐ No
5. Is there an established and adequate program for training personnel? Comments:	☑ Yes ☐ No
6. Are preventive maintenance task schedules being met? Comments:	☑ Yes ☐ No
7. Does the plant experience any organic or hydraulic overloading? Comments:	☐ Yes ☑ No
8. Have there been any bypassing or overflows since the last inspection? Comments:	☐ Yes ☑ No
9. Is the standby generator (including power transfer switch) operational and exercised regularly? Comments: **Not applicable**	☐ Yes ☐ No
10. Is the plant alarm system operational and tested regularly? Comments:	☑ Yes ☐ No

Virginia Department of Environmental Quality
Northern Regional Office

FOCUSED CEI TECH/LAB INSPECTION REPORT

FACILITY NAME: Locust Grove Elementary School		**INSPECTION DATE:**	April 14, 2009
		INSPECTOR	Terry Nelson
PERMIT No.: VA0078131		**REPORT DATE:**	April 23, 2009
TYPE OF FACILITY: ☑ Municipal ☐ Major ☐ Industrial ☑ Minor ☐ Federal ☐ Small Minor ☐ HP ☐ LP		**TIME OF INSPECTION:**	Arrival 1030 / Departure 1120
		TOTAL TIME SPENT (including prep & travel)	4 hours
PHOTOGRAPHS: ☑ Yes ☐ No		**UNANNOUNCED INSPECTION?**	☐ Yes ☑ No
REVIEWED BY / Date: [signature] 4/20/09			
PRESENT DURING INSPECTION: Tim Jenkins, Dabney & Crooks			

TECHNICAL INSPECTION

1. Has there been any new construction? • If so, were plans and specifications approved? Comments:	☐ Yes ☑ No
2. Is the Operations and Maintenance Manual approved and up-to-date? Comments: The O&M listed flow tiers from a previous permit that does not include the second treatment train. Outdated permit in Appendix, DEQ phone numbers are not consistent (703-583-3800 is recommended), outdated Chain of Custody for Patton, Harris, and Rust, some test methods listed are no longer approved	☐ Yes ☑ No
3. Are the Permit and/or Operation and Maintenance Manual specified licensed operator being met? Comments:	☑ Yes ☐ No
4. Are the Permit and/or Operation and Maintenance Manual specified operator staffing requirements being met? Comments:	☑ Yes ☐ No
5. Is there an established and adequate program for training personnel? Comments:	☑ Yes ☐ No
6. Are preventive maintenance task schedules being met? Comments:	☑ Yes ☐ No
7. Does the plant experience any organic or hydraulic overloading? Comments:	☐ Yes ☑ No
8. Have there been any bypassing or overflows since the last inspection? Comments:	☐ Yes ☑ No
9. Is the standby generator (including power transfer switch) operational and exercised regularly? Comments: **Not applicable**	☐ Yes ☐ No
10. Is the plant alarm system operational and tested regularly? Comments:	☑ Yes ☐ No

Permit #	VA0078131

TECHNICAL INSPECTION

11. Is sludge disposed of in accordance with the approved sludge management plan? ☑ Yes ☐ No
    Comments: Wheeler Septic takes sludge to Massaponax WWTF

12. Is septage received? ☐ Yes ☑ No
    - If so, is septage loading controlled, and are appropriate records maintained?

    Comments:

13. Are all plant records (operational logs, equipment maintenance, industrial waste contributors, sampling and testing) available for review and are records adequate? ☑ Yes ☐ No
    Comments:

14. Which of the following records does the plant maintain?
    ☑ Operational logs ☑ Instrument maintenance & calibration
    ☑ Mechanical equipment maintenance ☐ Industrial Waste Contribution (Municipal facilities)
    Comments:

15. What does the operational log contain?
    ☑ Visual observations ☑ Flow Measurement ☑ Laboratory results ☑ Process adjustments
    ☐ Control calculations ☐ Other (specify)
    Comments:

16. What do the mechanical equipment records contain?
    ☐ As built plans and specs ☑ Manufacturers instructions ☑ Lubrication schedules
    ☐ Spare parts inventory ☐ Equipment/parts suppliers
    ☐ Other (specify)
    Comments:

17. What do the industrial waste contribution records contain (Municipal only)?
    ☐ Waste characteristics ☐ Impact on plant ☐ Locations and discharge types
    ☐ Other (specify)
    Comments: **Not applicable**

18. Which of the following records are kept at the plant and available to personnel?
    ☑ Equipment maintenance records ☑ Operational log ☐ Industrial contributor records
    ☑ Instrumentation records ☑ Sampling and testing records
    Comments:

19. List records not normally available to plant personnel and their location:
    Comments: **Major maintenance records stored at office for Orange County Schools superintendent.**

20. Are the records maintained for the required time period (three or five years)? ☑ Yes ☐ No
    Comments:

Permit #	VA0078131

UNIT PROCESS EVALUATION SUMMARY SHEET

UNIT PROCESS	APPLICABLE	PROBLEMS*	COMMENTS
Sewage Pumping	X		
Flow Measurement (Influent)			
Screening/Comminution			
Grit Removal			
Flow Equalization	X		
Primary Sedimentation			
Septic Tank and Sand Filter	X		
Activated Sludge Aeration	X		
Secondary Sedimentation	X		
Flocculation			
Tertiary Sedimentation			
Filtration			
Chlorination	X		
Dechlorination	X		
Post Aeration	X		
Flow Measurement (Effluent)	X		
Plant Outfall	X		
Sludge Pumping			
Aerobic Digestion			

* Problem Codes

1. Unit Needs Attention
2. Abnormal Influent/Effluent
3. Evidence of Equipment Failure
4. Unapproved Modification or Temporary Repair
5. Evidence of Process Upset
6. Other (explain in comments)

Permit #	VA0078131

INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS

- Operators are at the facility approximately 30 minutes per visit. The plant is not manned when school is not in session or no discharge is anticipated.
- Orange County schools were not in session during the inspection.
- A grease trap and septic tank precede the treatment system. Orange County Schools maintains the grease trap and septic tank. The septic tank was pumped out in July 2008.
- From the septic tank, the flow goes into a pump station that sends flow into the holding tank for the new treatment unit.
- The secondary treatment system is two package plants that contain a sludge holding tank, aeration basins, and clarifier.
- The new treatment unit also has a storage tank that can hold at least 24 hours of influent.
- The storage tank was below the activation level for the lead pump.
- A slight odor was detected around the storage tank. Mr. Jenkins said the sludge holding tank was in the same area.
- Mr. Jenkins cycled all the blowers during the inspection. No problems were noted for the blowers.
- After the blowers ran for 5-10 minutes, the odor dissipated.
- Flow from the storage tank is pumped to a flow splitter that directs the flow to the aeration basins or back into the storage tank.
- The pumped water was originally very dark with heavy black solids. A lighter color developed in several minutes.
- Mr. Jenkins said he would increase the running time for the storage tank aeration blower.
- The aeration basins appeared to be properly operated. When the aeration blower stopped, the solids quickly began to flocculate and settle.
- The bar screen for the old treatment train has not been removed. With the new treatment train, the bar screen is bypassed. Rags and other debris were collecting on the outside of the bar screen. Mr. Jenkins said he would have the bar screen cleaned.
- The clarifier for the new treatment unit had a layer of scum. Mr. Jenkins said the scum layer had formed since last Friday. The layer began to dissipate when he started the solids recycle pump.
- The log book is stored in a waterproof cabinet. The log book included entries for minor maintenance performed on the system.
- The effluent flow meter is located near the clarifiers for the treatment units.
- The calibration sticker for the meter was from 2004. Dabney & Crooks staff reviewed the records and found the meter had not been calibrated since then. On 04/18/08, the meter was recalibrated according to an email received from Doug Crooks.
- The chlorine and sodium bisulfite table feeders are in below ground vaults. The vault lids are locked steel doors.
- From the dechlor vault, the effluent flows to the cascade steps. The operator has an adjacent set of stairs to reach the creek and collect the samples.
- Due to erosion, the stairs are tilted to the right. When the stairs are wet, the operator can slip and injury themselves.
- No effluent was observed flowing into the creek.
- The old treatment system for the school included sand filter beds. Rusted paint cans were noticed setting on the edge of one filter bed. According to Doug Crooks, school maintenance staff have been notified to remove the containers.

Permit #	VA0078131

EFFLUENT FIELD DATA:

Flow	NA MGD	**Dissolved Oxygen**	NA mg/L	**TRC (Contact Tank)**	NA mg/L
pH	NA S.U.	**Temperature**	NA °C	**TRC (Final Effluent)**	NA mg/L
Was a Sampling Inspection conducted?	☐ Yes (see Sampling Inspection Report) ☑ No				

CONDITION OF OUTFALL AND EFFLUENT CHARACTERISTICS:

1. Type of outfall: ☑ Shore based ☐ Submerged Diffuser? ☐ Yes ☐ No
2. Are the outfall and supporting structures in good condition? ☑ Yes ☐ No
3. Final Effluent (evidence of following problems): ☐ Sludge bar ☐ Grease
   ☐ Turbid effluent ☐ Visible foam ☐ Unusual color ☐ Oil sheen
4. Is there a visible effluent plume in the receiving stream? ☐ Yes ☐ No
5. Receiving stream: ☑ No observed problems ☐ Indication of problems (explain below)

   Comments: Facility was not discharging.

REQUIRED CORRECTIVE ACTIONS:

1. Flow meters shall be calibrated at least once per year.
2. In accordance with the reissued permit, the O&M updates are due by June 2, 2009.

NOTES and COMMENTS:

1. The bar screens should be regularly checked and accumulated debris removed.
2. DEQ staff recommends that once school ends, the system be drained and all solids pumped out of the storage tank.
3. DEQ staff recommends that Orange County Schools stabilize the ground around the stairs adjacent to the cascade aeration.

1) Storage tank.

2) Aeration basin when blower stopped.

3) Scum layer on clarifier.

4) Post aeration steps (April 2005 photo)

Locust Grove Elementary School	VPDES Permit VA0078131
Photos by Terry Nelson	April 14, 2009
Layout by Terry Nelson	Page 1 of 1

To:	Joan Crowther
From:	Jennifer Carlson
Date:	September 10, 2014
Subject:	Planning Statement for Locust Grove Elementary School
Permit Number:	VA0078131

Information for Outfall 001:

Discharge Type: Municipal
Discharge Flow: 0.014 MGD
Receiving Stream: Cormack Run, UT
Latitude / Longitude: 38° 17' 45" 77°49' 53"
Rivermile: 0.9
Streamcode: 3-XDD
Waterbody: VAN-E17R
Water Quality Standards: Class III, Section 4
Drainage Area: 0.04 sq. mi.

1. Please provide water quality monitoring information for the receiving stream segment. If there is not monitoring information for the receiving stream segment, please provide information on the nearest downstream monitoring station, including how far downstream the monitoring station is from the outfall.

   This facility discharges into an unnamed tributary to Cormack Run. This unnamed tributary has not been monitored or assessed by DEQ. The nearest downstream DEQ monitoring station is on Mine Run, 3-MIR004.05, located at the Route 611 bridge crossing. This station on Mine Run is located approximately 7.4 miles downstream of Outfall 001. The following is the water quality summary for Mine Run, as taken from the 2012 Integrated Report:

   Class III, Section 4.

   DEQ monitoring station located in this segment of Mine Run:
   - *Ambient water quality monitoring station 3-MIR004.05 at Route 611.*

   E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. A bacteria TMDL for the Mine Run watershed was completed and approved. The aquatic life, fish consumption and wildlife uses are considered fully supporting.

2. Does this facility discharge to a stream segment on the 303(d) list? If yes, please fill out Table A.

   No.

3. Are there any downstream 303(d) listed impairments that are relevant to this discharge? If yes, please fill out Table B.

Yes.

Table B. Information on Downstream 303(d) Impairments and TMDLs

Waterbody Name	Impaired Use	Cause	Distance From Outfall	TMDL completed	WLA	Basis for WLA	TMDL Schedule
Impairment Information in the 2012 Integrated Report							
Mine Run	Recreation	*E. coli*	1.3 miles	Mountain Run and Mine Run Bacteria 11/15/2005	2.44E+10 cfu/year *E. coli*	126 cfu/100 ml *E. coli* --- 0.014 MGD	WLA was assigned to facility in a modification to the TMDL. EPA approval date: 5/5/08
Rapidan River	Fish Consumption	Mercury	14.6 miles	No	---	---	2022

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

The tidal Rappahannock River, which is located approximately 40 miles downstream of this facility, is listed with a PCB impairment. In support for the PCB TMDL that is scheduled for development by 2016 for the tidal Rappahannock River, this facility is a candidate for low-level PCB monitoring, based upon its designation as a minor municipal facility. Low-level PCB analysis uses EPA Method 1668, which is capable of detecting low-level concentrations for all 209 PCB congeners. DEQ staff has concluded that low-level PCB monitoring is not warranted for this facility, as it is a small wastewater treatment facility (<0.1 MGD). Based upon this information, this facility will not be requested to monitor for low-level PCBs.

There is a completed downstream TMDL for the aquatic life use impairment for the Chesapeake Bay. However, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

5. Fact Sheet Requirements – Please provide information regarding any drinking water intakes located within a 5 mile radius of the discharge point.

There are no public water supply intakes located within 5 miles of this discharge.

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Locust Grove Elementary School WWTP Permit No.: VA0078131

Receiving Stream: Cormack Run, UT Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	mg/L	1Q10 (Annual) =	0 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO3) =	88.6 mg/L
90% Temperature (Annual) =	deg C	7Q10 (Annual) =	0 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	25 deg C
90% Temperature (Wet season) =	deg C	30Q10 (Annual) =	0 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	deg C
90% Maximum pH =	SU	1Q10 (Wet season) =	0 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	7.7 SU
10% Maximum pH =	SU	30Q10 (Wet season)	0 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	SU
Tier Designation (1 or 2) =	1	30Q5 =	0 MGD			Discharge Flow =	0.014 MGD
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	0 MGD				
Trout Present Y/N? =	n						
Early Life Stages Present Y/N? =	y						

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	--	--	na	9.3E+00
Acrylonitrile [C]	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	--	--	na	2.5E+00
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	3.0E+00	--	na	5.0E-04
Ammonia-N (mg/l) (Yearly)	0	1.44E+01	1.82E+00	na	--	1.44E+01	1.82E+00	na	--	--	--	--	--	--	--	--	--	1.44E+01	1.82E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	1.44E+01	3.58E+00	na	--	1.44E+01	3.58E+00	na	--	--	--	--	--	--	--	--	--	1.44E+01	3.58E+00	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E+02
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	--	--	na	5.1E+02
Benzidine [C]	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	--	--	na	2.0E-03
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Bis2-Chloroethyl Ether [C]	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	--	--	na	5.3E+00
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	6.5E+04
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	--	--	na	2.2E+01
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
Cadmium	0	3.4E+00	1.0E+00	na	--	3.4E+00	1.0E+00	na	--	--	--	--	--	--	--	--	--	3.4E+00	1.0E+00	na	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	1.6E+01
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	8.1E-03
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03

Attachment 4

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E+02
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	5.2E+02	6.7E+01	na	--	5.2E+02	6.7E+01	na	--	--	--	--	--	--	--	--	--	5.2E+02	6.7E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene[C]	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	--	--	na	1.8E-02
Copper	0	1.2E+01	8.1E+00	na	--	1.2E+01	8.1E+00	na	--	--	--	--	--	--	--	--	--	1.2E+01	8.1E+00	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	1.6E+04
DDD[C]	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	--	--	na	3.1E-03
DDE[C]	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	--	--	na	2.2E-03
DDT[C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	2.2E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	1.7E-01	1.7E-01	na	--
Dibenz(a,h)anthracene[C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	--	na	9.6E+02
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	--	--	na	1.9E+02
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	--	--	na	2.8E-01
Dichlorobromomethane[C]	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	--	--	na	1.7E+02
1,2-Dichloroethane[C]	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	--	--	na	7.1E+03
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	na	1.0E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	--	na	2.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
1,3-Dichloropropene[C]	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	--	--	na	2.1E+02
Dieldrin[C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	5.4E-04
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	--	--	na	4.4E+04
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	--	--	na	8.5E+02
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	na	1.1E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E+03
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8E+02
2,4-Dinitrotoluene[C]	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	--	--	na	3.4E+01
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	--	--	na	5.1E-08
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	--	na	2.0E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	6.0E-02
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	--	na	3.0E-01

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	--	--	na	1.4E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	7.9E-04
Heptachlor Epoxide[C]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	3.9E-04
Hexachlorobenzene[C]	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	--	--	na	2.9E-03
Hexachlorobutadiene[C]	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Hexachlorocyclohexane Alpha-BHC[C]	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	--	--	na	4.9E-02
Hexachlorocyclohexane Beta-BHC[C]	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	--	--	na	1.7E-01
Hexachlorocyclohexane Gamma-BHC[C] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	9.5E-01	--	na	1.8E+00
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	1.1E+03
Hexachloroethane[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone[C]	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E+03
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	1.0E+02	1.2E+01	na	--	1.0E+02	1.2E+01	na	--	--	--	--	--	--	--	--	--	1.0E+02	1.2E+01	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	1.6E+02	1.8E+01	na	4.6E+03	1.6E+02	1.8E+01	na	4.6E+03	--	--	--	--	--	--	--	--	1.6E+02	1.8E+01	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	--	--	na	6.9E+02
N-Nitrosodimethylamine[C]	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E+01
N-Nitrosodiphenylamine[C]	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E+01
N-Nitrosodi-n-propylamine[C]	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	--	--	na	5.1E+00
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	6.6E+00	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB Total[C]	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	--	1.4E-02	na	6.4E-04
Pentachlorophenol [C]	0	7.7E-03	5.9E-03	na	3.0E+01	7.7E-03	5.9E-03	na	3.0E+01	--	--	--	--	--	--	--	--	7.7E-03	5.9E-03	na	3.0E+01
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	--	--	na	8.6E+05
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	**2.0E+01**	**5.0E+00**	**na**	**4.2E+03**
Silver	0	2.8E+00	--	na	--	2.8E+00	--	na	--	--	--	--	--	--	--	--	--	**2.8E+00**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+01**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+01**
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.7E-01**
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+03**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	**7.3E-01**	**2.0E-04**	**na**	**2.8E-03**
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	**4.6E-01**	**7.2E-02**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.0E+01**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+02**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+02**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
Zinc	0	1.1E+02	1.1E+02	na	2.6E+04	1.1E+02	1.1E+02	na	2.6E+04	--	--	--	--	--	--	--	--	**1.1E+02**	**1.1E+02**	**na**	**2.6E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	6.2E-01
Chromium III	4.0E+01
Chromium VI	6.4E+00
Copper	4.8E+00
Iron	na
Lead	6.9E+00
Manganese	na
Mercury	4.6E-01
Nickel	1.1E+01
Selenium	3.0E+00
Silver	1.1E+00
Zinc	4.2E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Locust Grove Elementary School DMR pH Data

January 2000 through November 2008

Date Due	Max pH
10-FEB-2000	7.4
10-MAR-2000	7.5
10-APR-2000	7.4
10-MAY-2000	7.3
10-JUN-2000	7.3
10-JUL-2000	8.1
10-AUG-2000	
10-SEP-2000	7.8
10-OCT-2000	7.2
10-NOV-2000	7.6
10-DEC-2000	7.7
10-JAN-2001	7.4
10-FEB-2001	7.3
10-MAR-2001	7.9
10-APR-2001	7.7
10-MAY-2001	7.3
10-JUN-2001	7.4
10-JUL-2001	7.3
10-AUG-2001	
10-SEP-2001	7.9
10-OCT-2001	7.7
10-NOV-2001	7.7
10-DEC-2001	7.5
10-JAN-2002	7.3
10-FEB-2002	7.5
10-MAR-2002	7.1
10-APR-2002	7.1
10-MAY-2002	7.5
10-JUN-2002	7.1
10-JUL-2002	6.9
10-AUG-2002	
10-SEP-2002	
10-OCT-2002	7.3
10-NOV-2002	7.2
10-DEC-2002	7.3
10-JAN-2003	7.2
10-FEB-2003	7.6
10-MAR-2003	8.1
10-APR-2003	7.2
10-MAY-2003	7.4
10-JUN-2003	7.2
10-JUL-2003	7.0
10-AUG-2003	
10-SEP-2003	7.6

Date Due	Max pH
10-OCT-2003	7.6
10-NOV-2003	7.5
10-DEC-2003	7.3
10-JAN-2004	7.8
10-FEB-2004	7.3
10-MAR-2004	7.5
10-APR-2004	7.2
10-MAY-2004	7.4
10-JUN-2004	7.2
10-JUL-2004	7.6
10-AUG-2004	7.6
10-SEP-2004	7.3
10-OCT-2004	7.4
10-NOV-2004	7.5
10-DEC-2004	8.8
10-JAN-2005	7.4
10-FEB-2005	7.9
10-MAR-2005	7.7
10-APR-2005	7.6
10-MAY-2005	7.7
10-JUN-2005	7.6
10-JUL-2005	7.3
10-AUG-2005	7.5
10-SEP-2005	7.4
10-OCT-2005	7.2
10-NOV-2005	7.4
10-DEC-2005	7.2
10-JAN-2006	7.6
10-FEB-2006	7.3
10-MAR-2006	7.3
10-APR-2006	7.5
10-MAY-2006	7.2
10-JUN-2006	7.2
10-JUL-2006	7.5
10-AUG-2006	7.1
10-SEP-2006	7.3
10-OCT-2006	7.5
10-NOV-2006	7.4
10-DEC-2006	7.4
10-JAN-2007	7.1
10-FEB-2007	7.1
10-MAR-2007	7.4
10-APR-2007	7.6
10-MAY-2007	7.4

Date Due	Max pH
10-JUN-2007	7.4
10-JUL-2007	8.1
10-AUG-2007	7.3
10-SEP-2007	7.6
10-OCT-2007	7.5
10-NOV-2007	7.4
10-DEC-2007	6.9
10-JAN-2008	7.0
10-FEB-2008	6.9
10-MAR-2008	7.3
10-APR-2008	7.3
10-MAY-2008	7.7
10-JUN-2008	7.4
10-JUL-2008	6.8
10-AUG-2008	7.6
10-SEP-2008	7.3
10-OCT-2008	7.7
10-NOV-2008	7.7

pH 90th percentile= 7.7 SU

Attachment 5

9/2/2014 4:37:54 PM

Facility = Locust Grove Elementary School
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 14.4
WLAc =
Q.L. = .2
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 14.4
Average Weekly limit = 14.4
Average Monthly LImit = 14.4

The data are:

9

Locust Grove Elementary School - VA0078131
Effluent Hardness Data Collected From February 1994 to April 1998

Date		Hardness
Feb-94		47.3
Mar-94		36
Apr-94		53
May-94		64.7
Jun-94		93
Jul-94		91.2
Aug-94		71.4
Sep-94		92.4
Oct-94		124
Nov-94		127.6
Dec-94		124.8
Jan-95		108
Feb-95		162
Mar-95		50
Apr-95		104
May-95		138
Jun-95		84
Jul-95		124
Aug-95		96
Sep-95		132
Oct-95		112
Nov-95		123
Dec-95		76
Jan-96		84
Feb-96		90
Mar-96		118
Apr-96		104
May-96		64
Jun-96		208
Aug-96		81
Sep-96		96
Oct-96		150
Nov-96		68
Dec-96		64
Jan-97		74.8
Feb-97		64
Mar-97		112
Apr-97		76
May-97		84
Jun-97		58
Aug-97		72
Sep-97		48
Oct-97		64
Nov-97		72
Dec-97		32
Jan-98		78
Feb-98		76
Mar-98		56
Apr-98		42
May-98		84
Jun-98		64

Average Hardness 88.59216

Attachment 7

Total Chlorine Residual

9/3/2014 3:22:24 PM

Facility = Locust Grove Elementary School WWTP
Chemical = Total Residual Chlorine
Chronic averaging period = 4
WLAa = 19
WLAc = 11
Q.L. = 100
# samples/mo. = 30
# samples/wk. = 8

Summary of Statistics:

observations = 1
Expected Value = 200
Variance = 14400
C.V. = 0.6
97th percentile daily values = 486.683
97th percentile 4 day average = 332.758
97th percentile 30 day average= 241.210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 16.0883226245855
Average Weekly limit = 9.59676626920107
Average Monthly LImit = 7.9737131838758

Values are expressed as ug/L.

The data are:

200

********** ********** **********

REGIONAL MODELING SYSTEM VERSION 3.2

****

MODEL SIMULATION FOR THE Locust Grove Elementary School DISCHARGE

TO Cormack Run, UT

COMMENT: Model Run for anticipated expansion

THE SIMULATION STARTS AT THE Locust Grove Elementary School DISCHARGE

********** PROPOSED PERMIT LIMITS **********

FLOW = .014 MGD cBOD5 = 17 Mg/L TKN = 8 Mg/L D.O. = 6 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

THE SECTION BEING MODELED IS 1 SEGMENT LONG
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

********** BACKGROUND CONDITIONS **********

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.00000 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 7.794 Mg/L
THE BACKGROUND cBODu OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

********** MODEL PARAMETERS **********

SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. ½C	DO-SAT Mg/L
1	1.70	0.332	20.000	1.600	0.500	0.000	360.00	22.00	8.660

(The K Rates shown are at 20½C ... the model corrects them for temperature.)

********** RESPONSE FOR SEGMENT 1 **********

TOTAL STREAMFLOW = 0.0140 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.000	6.000	42.500	21.650
0.100	0.100	5.541	41.148	21.419
0.200	0.200	5.267	39.840	21.190
0.300	0.300	5.117	38.573	20.963
0.400	0.400	5.050	37.346	20.739
0.500	0.500	5.039	36.158	20.517
0.600	0.600	5.065	35.008	20.298
0.700	0.700	5.115	33.895	20.081
0.800	0.800	5.180	32.817	19.867
0.900	0.900	5.255	31.774	19.654
1.000	1.000	5.335	30.763	19.444
1.100	1.100	5.418	29.785	19.236
1.200	1.200	5.502	28.838	19.031
1.300	1.300	5.585	27.921	18.827
1.400	1.400	5.668	27.033	18.626
1.500	1.500	5.750	26.173	18.427
1.600	1.600	5.830	25.341	18.230
1.700	1.700	5.907	24.535	18.035

****

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
08-17-1998 14:59:53

DATA FILE = LOCO1.MOD

********** ********** **********

REGIONAL MODELING SYSTEM VERSION 3.2

DATA FILE SUMMARY

****

THE NAME OF THE DATA FILE IS: LOCO1.MOD

THE STREAM NAME IS: Cormack Run, UT
THE RIVER BASIN IS: Rappahannock River
THE SECTION NUMBER IS: III
THE CLASSIFICATION IS: 4

STANDARDS VIOLATED (Y/N) = N
STANDARDS APPROPRIATE (Y/N) = Y

DISCHARGE WITHIN 3 MILES (Y/N) = N

THE DISCHARGE BEING MODELED IS: Locust Grove Elementary School

PROPOSED LIMITS ARE:
FLOW = .014 MGD
BOD5 = 17 MG/L
TKN = 8 MG/L
D.O. = 6 MG/L

THE NUMBER OF SEGMENTS TO BE MODELED = 1

7Q10 WILL BE CALCULATED BY: DRAINAGE AREA COMPARISON
THE GAUGE NAME IS: Mine Run at Route 611
GAUGE DRAINAGE AREA = 31.8 SQ.MI.
GAUGE 7Q10 = .051704 MGD
DRAINAGE AREA AT DISCHARGE = 0 SQ.MI.

STREAM A DRY DITCH AT DISCHARGE (Y/N) = Y
ANTIDEGRADATION APPLIES (Y/N) = N

ALLOCATION DESIGN TEMPERATURE = 22 ½C

SEGMENT INFORMATION

SEGMENT # 1

SEGMENT ENDS BECAUSE: THE MODEL ENDS

SEGMENT LENGTH = 1.7 MI

SEGMENT WIDTH = .9 FT
SEGMENT DEPTH = .15 FT
SEGMENT VELOCITY = .3 FT/SEC

DRAINAGE AREA AT SEGMENT START = 0 SQ.MI.
DRAINAGE AREA AT SEGMENT END = 5.18 SQ.MI.

ELEVATION AT UPSTREAM END = 400 FT
ELEVATION AT DOWNSTREAM END = 320 FT

THE CROSS SECTION IS: RECTANGULAR
THE CHANNEL IS: MODERATELY MEANDERING

POOLS AND RIFFLES (Y/N) = N

THE BOTTOM TYPE = SILT
SLUDGE DEPOSITS = NONE
AQUATIC PLANTS = NONE
ALGAE OBSERVED = NONE
WATER COLORED GREEN (Y/N) = N

****

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
08-17-1998 15:00:16

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Orange County, Virginia.

PUBLIC COMMENT PERIOD: XXX, 2014 to XXX, 2014

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Orange County School Board, 200 Dailey Drive, Orange, VA 22960, VA0078131

NAME AND ADDRESS OF FACILITY: Locust Grove Elementary School WWTP, 31230 Constitutional Highway, Orange, VA 22960

PROJECT DESCRIPTION: Orange County School Board has applied for a reissuance of a permit for the public Locust Grove Elementary School WWTP. The applicant proposes to release treated sewage wastewaters from a public school at a rate of 0.014 million gallons per day into a water body. The sludge will be disposed by transporting it to the Spotsylvania County's Massaponax Wastewater Treatment Plant for final disposal. The facility proposes to release the treated sewage in the Cormack Run, UT in Orange County in the Rappahannock River watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, $cBOD_5$, Total Residual Chlorine, Total Kjeldahl Nitrogen, Total Suspended Solids, Dissolved Oxygen, and *E.coli*.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by hand-delivery, e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the draft permit and application at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.
Name: Joan C. Crowther
Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3925 E-mail: joan.crowther@deq.virginia.gov Fax: (703) 583-3821